SITE BUDDY

OWNER'S MANUAL

DIESEL POWERED TRASH PUMP

IMPORTANT — Please make certain that persons who are to use this equipment thoroughly read and understand this user's manual prior to operation

PREFACE

Thank you for purchasing our products. We appreciate your business. The following manual is only a guide to assist you and is not a complete of comprehensive manual of all aspects of your water pump unit. Some of the illustrations and photos will differ slightly then your model and only serve as an illustration. The equipment you have purchased is a complex piece of machinery. We recommend that that you consult with a dealer if you have doubts or concerns as to your experience or ability to properly maintain or repair your equipment. You will save time and the inconvenience of having to go back to the store if you choose to write or call us concerning missing parts, service questions, operating advice, and/or assembly questions. Our diesel powered water pumps have some of the following features:

- Lightweight construction
- Hard working four-stroke diesel internal combustion engine
- Large fuel tank
- High quality mechanical seals
- Self-priming structure

The air-cooled diesel semi trash pumps are self-priming single-stage centrifugal water pumps. The bodies of the water pumps are constructed of high quality die-cast aluminum alloy. The internal rotating rings arc constructed of ceramics and the stationary rings are constructed of graphite. The water pumps are widely used in fieldwork and on construction sites. Our water pumps provide a portable mobile solution in pumping liquids from one place to another.

This manual will explain how to operate and service your semi-trash pump unit.

TABLE OF CONTENTS

Page number

OVERVIEW OR VARTOUS MODELS OF WATER PUMPS ……..…...…..….1
TECHNICAL SPECIFICATIONS ……2
WATER PUMP SAFETY PRECAUTIONS …… …….……4
KNOWING YOUR SEMI-TRASH PUMP ……..*5*
PRE-OPERATTON PREPARATION ……..6
STARTING THE ENGINE ……10
OPERATION ……...14
STOPPING THE ENGINE ……..15
MAINTENANCE ……...16
IRAN SPORTING AND STORAGE ……..….20
TROUBLESHOOTING……...21
PUMP DIAGRAMS AND PARTS LISTINGS ……..23

OVERVIEW OF VARIOUS MODELS OF WATER PUMPS

Figure 1.Overall view of the diesel water pump unit

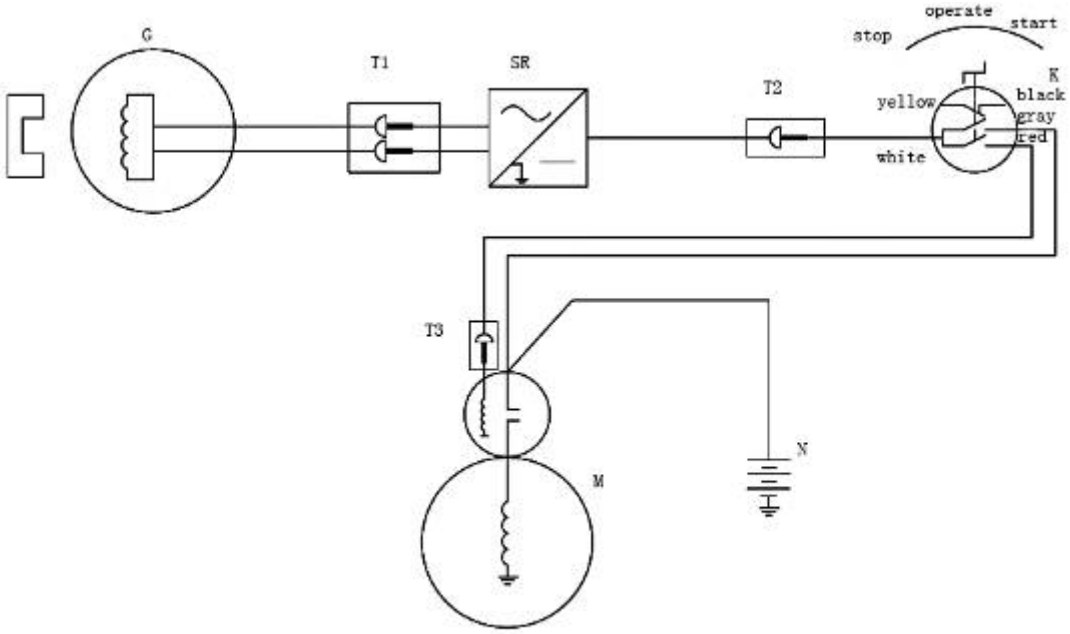
PROFESSIONAL SERIES MODEL

TECHNICAL SPECIFICATIONS

Table 1. Specifications in Metric units

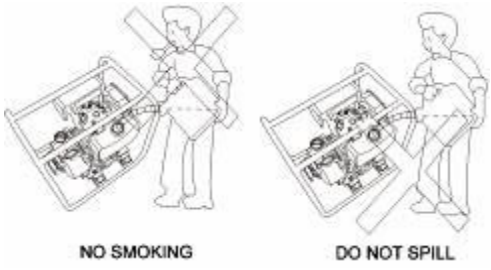
	Model No.	30TP
Pump	Suction port diameter(mm)	80
	Discharge port diameter(mm)	80
	Suction height(m)	7
	Pump lift (m)	25
	Displacement (m3)	55
Engine	Engine	TP178E
	Speed(rpm)	3600
	Displacement(cc)	296
	Max.Output(kw)	4.0
	Cooling system	Forced air cooling by flywheel
	Ignition	Direct fuel injection
	Shaft rotation	Clockwise from flywheel end

Wiring Diagram (optional for electric start models only)



SEMI-TRASH PUMP SAFETY PRECAUTIONS

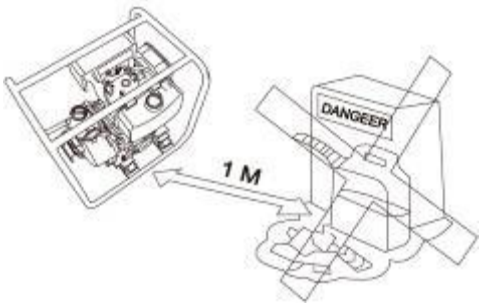
● Do not smoke or allow flames or sparks to get near fuel. Always refuel your engine in a well-ventilated place. Do not overfill the tank and always close the filler cap securely.



● Never run the pump indoors as the engine emits poisonous carbon monoxide.

● Do not touch the muffler during or just after operation, as the engine and muffler get hot Always let the engine fully cool before touching and storing the pump indoors.

● Always keep the pump at least 1 meter (3 feet) *away* from buildings and other equipment during operation. Do not place flammable objects or liquids close to the pump.



● Before operating your semi-trash pump, please check your local laws and regulations before operating your pump. It is illegal in some areas to operate an engine without a spark arrester.

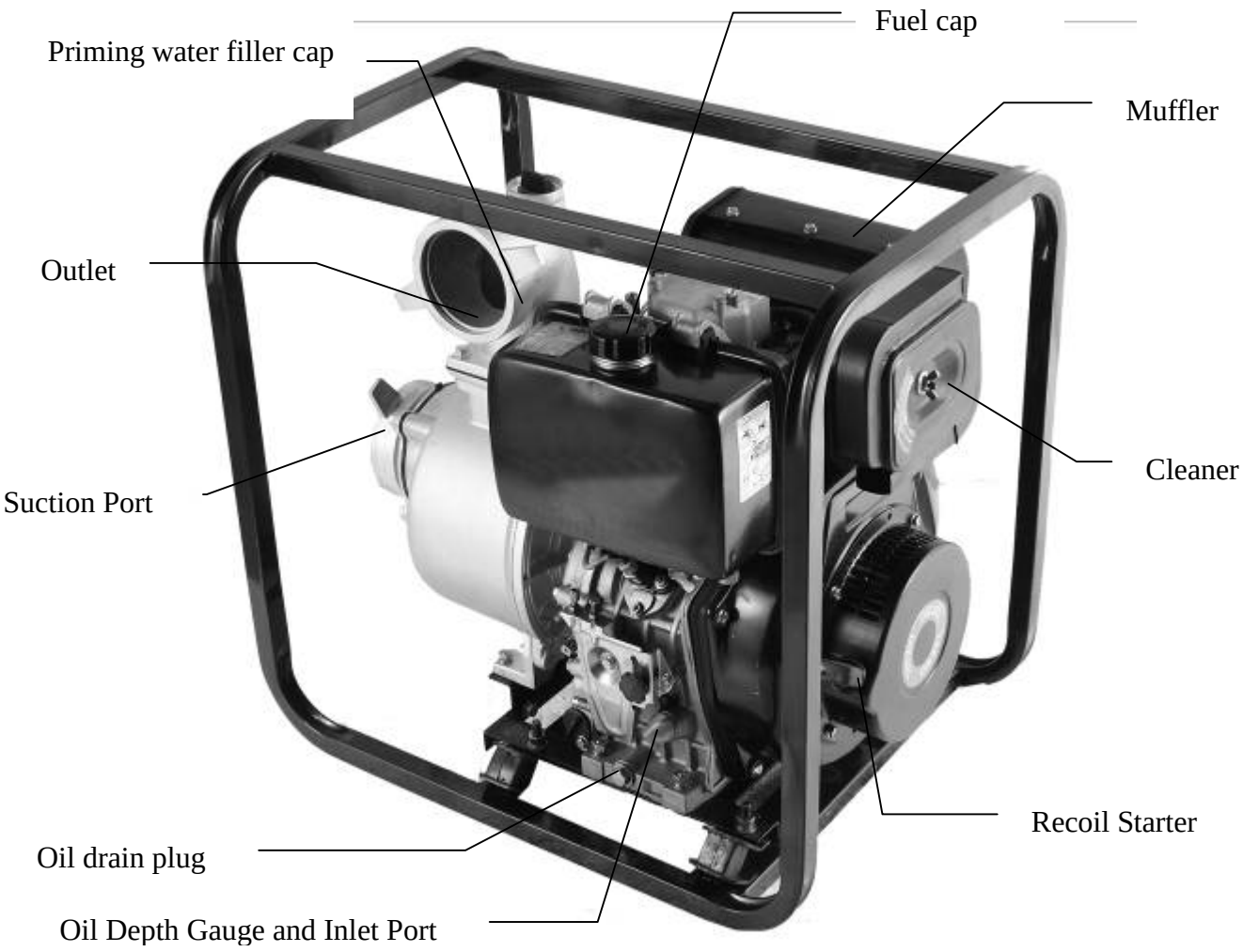
● Know all the pumps controls and know how to stop the pump quickly in the event of an emergency. Do not let anyone without proper instructions operate the pump.

● Always keep children and pets away from the pump.

● Do not pump flammable or corrosive liquids such as gasoline or acid. In order to prolong the life of your pump, avoid pumping corrosive 1iquds such as sea-water, chemical solutions, used oil, or acidic liquids.

● Always operate your pump on a level surface. If the pump is tilted, fuel may spill and rapid wear might occur as a result of inadequate lubrication.

KNOWING YOUR WATER PUMP
STANDARD MODEL



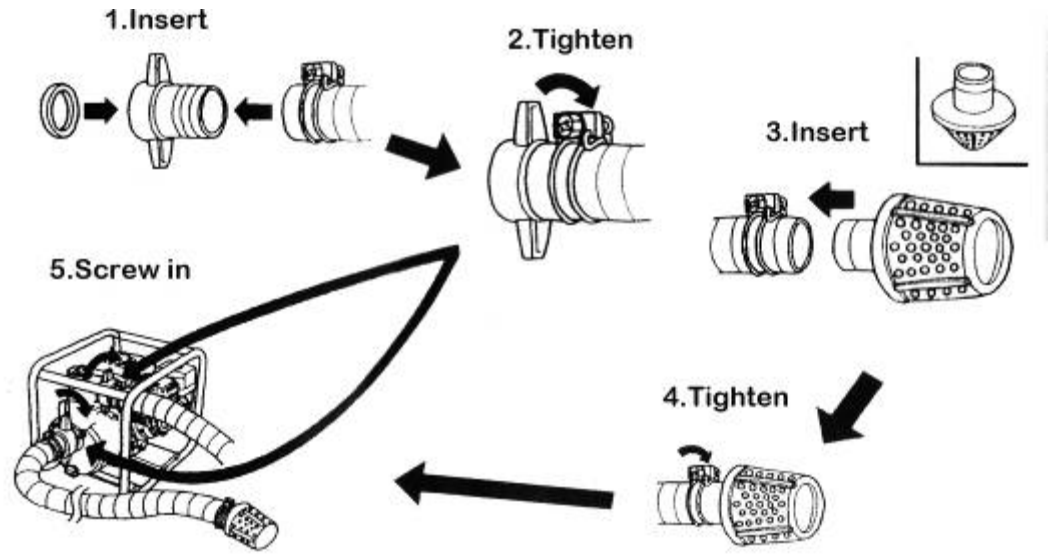
PRE-OPERATION PREPARATION

Suction Hose

The first step in preparing the pump for operation is to install the suction hose. For the suction hose, use a reinforced-wall or wire braided hose to prevent suction collapse. A short hose is recommended over a long hose. The pumps have standard National Pipe Threads on them; therefore, any standard hose set will fit with the pump. If your hoses arc metric threads or any other standard, please give our company a call and we may carry a full line of adapters or provide you with a possible solution.

NOTE: Always install the provided strainer on the end of the suction hose before pumping. If gravel or debris enters the pump, the impeller can he seriously damaged.

Shown below is *the pump hose utilizing a barbed connection and hose clamp. If you already have specialized hose, disregard the following diagram. When using the barbed connection setup, make sure to use a hose clamp to properly secure the hose to the barb connector.*



Discharge hose

The second step is to install the discharge hose. The discharge hose can be fabric, just make sure to use a hose clamp to secure the hose to the barb. This will prevent the hose from disconnecting under high pressure.

Note: A short and large-diameter hose is preferred over any other. A short and large diameter will provide lower fluid friction and improve efficiency.

Engine oil

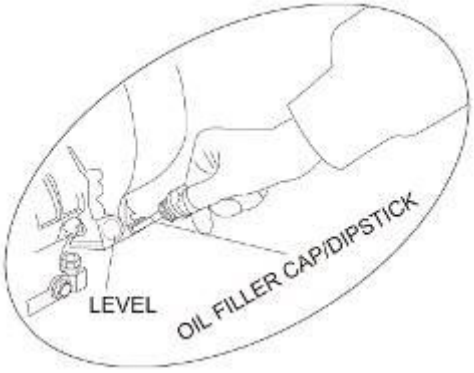
Engine oil is an important factor in determining the performance and life of your engine. Always make sure the oil level is within the upper and lower limits specified on the oil dipstick. Make sure to check the engine oil on a level surface or incorrect readings will result.

●To check the engine oil, first, remove the oil dipstick by turning counterclockwise.

●Wipe the dipstick clean and insert the dipstick back into the oil filler neck. Do not screw it in. Please refer to Fig 2-1.

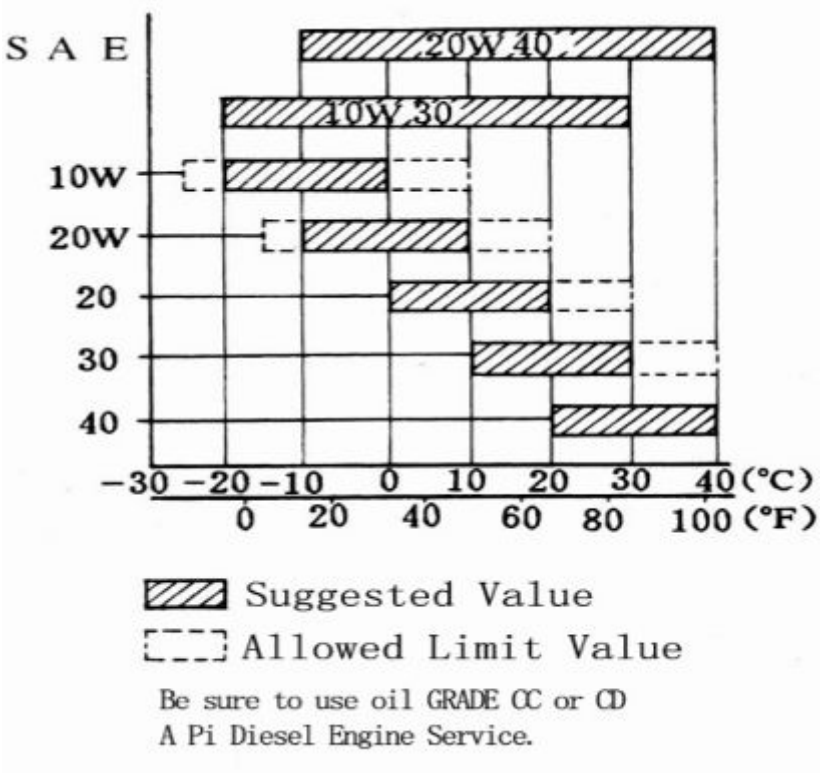
●If the level is low, fill engine oil to the top of the oil filler neck with the recommended oil below.

Fig 2-1. *Illustration of checking the engine oil*



Below is a table of recommended oil grades for the engine in various weather conditions. Please use the proper oil according to the Table 2-1.

Table 2-1. Ambient temperature versus *oil grades*



Note: For diesel engines, we highly recommend the use of 15W-40 engine oil. Some other grades are comparable, but 15W-40 **is** the preferred oil grade.

Fuel

Remove the fuel cap and fill the fuel tank with diesel fuel. The preferred fuel for diesel engines is diesel number 2, which can be easily obtained from a gas station. Do not use other fuels until consulting with your local dealer or our company.

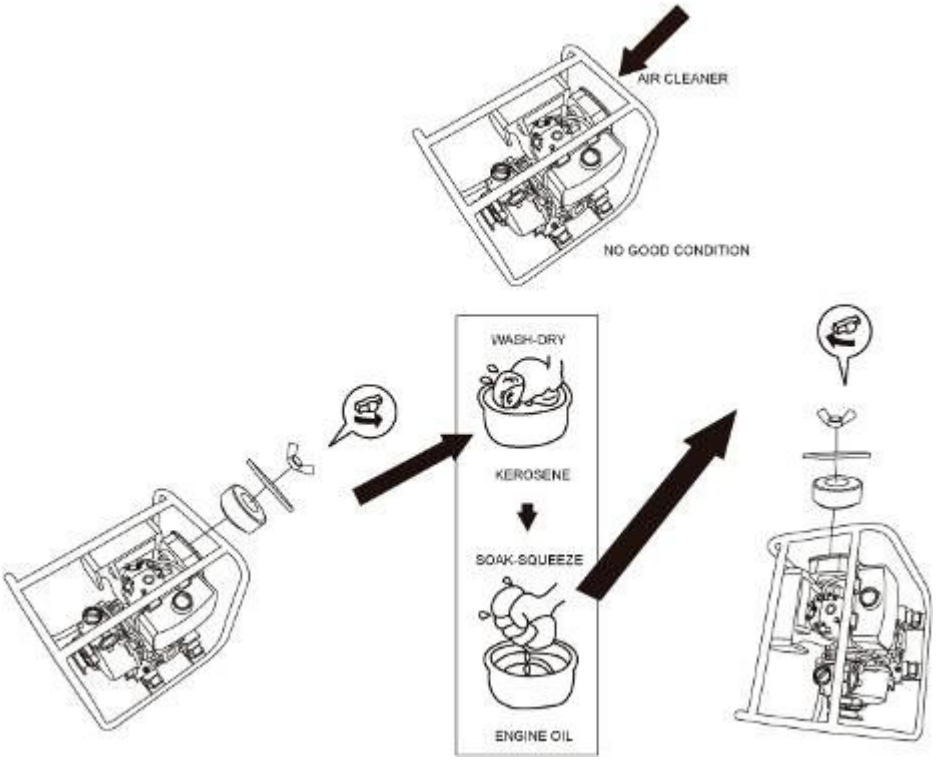
Do not smoke or allow flames or sparks to get near fuel. Always refuel your engine in a well-ventilated place. Do not overfill the tank and always close the filler cap securely.

NO SMOKING

DO NOT SPILL

Air Cleaner

Before starting your water pump, remove your air cleaner cover and verify that the air filter is clean and free of debris. Clean the air filter if necessary.



Priming water

The pump chamber should be completely filled before operating.

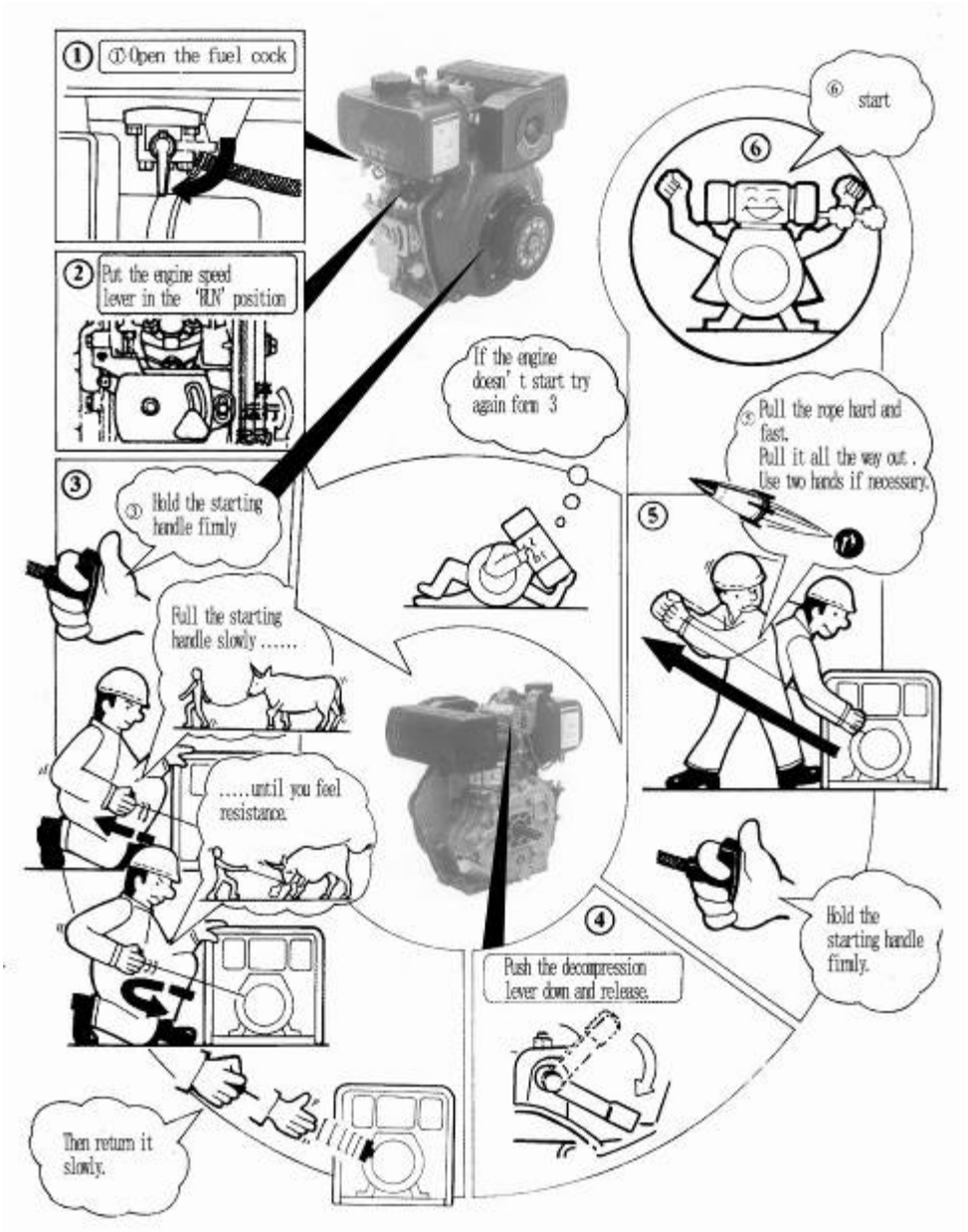
Note: Never operate the pump without priming water or the pump will overheat. Prolonged operation of the pump under these dry conditions will damage and destroy the seal.

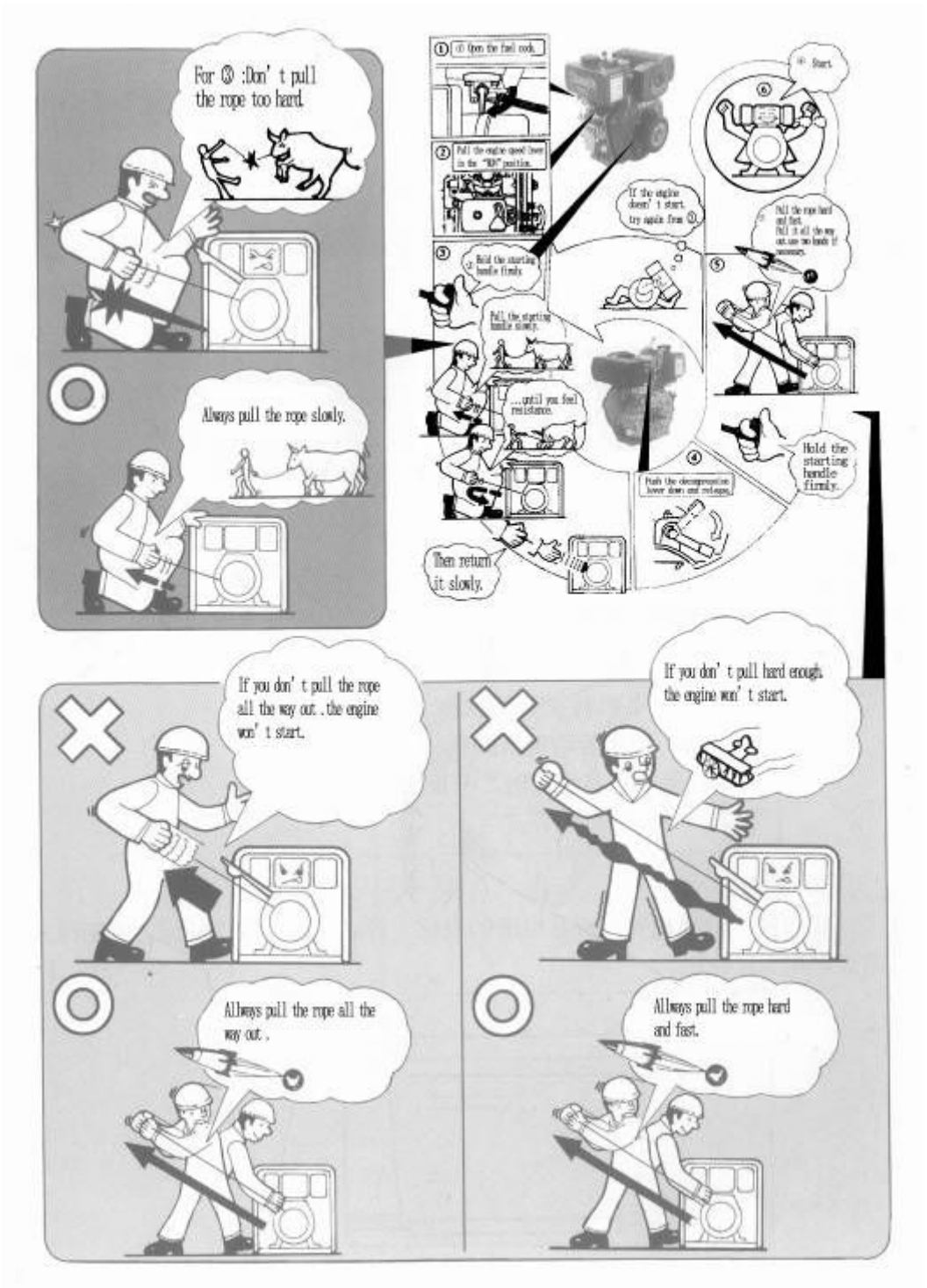
Follow these guidelines to fill the pump with priming water.

STARTING THE ENGINE

Recoil Starting

Note: When the engine is running, do not pull the recoil handle, otherwise the engine may be damaged.


① Open the fuel cock
② Put the engine speed lever in the "RUN" position
③ Hold the starting handle firmly
Pull the starting handle slowly .....
.....until you feel resistance.
Then return it slowly.
④ Push the decompression lever down and release.
If the engine doesn't start try again form 3
⑤ Pull the rope hard and fast. Pull it all the way out. Use two hands if necessary.
⑥ start
Hold the starting handle firmly.


For ⊗ :Don't pull the rope too hard.
Always pull the rope slowly.
① Open the fuel cock.
② Pull the engine speed lever to the "RUN" position.
③ Hold the starting handle firmly.
Pull the starting handle slowly.
...until you feel resistance.
Then return it slowly.
④ Push the decompression lever down and release.
⑤
⑥ Start.
If the engine doesn't start, try again from ②.
Hold the starting handle firmly.
If you don't pull the rope all the way out, the engine won't start.
Always pull the rope all the way out.
If you don't pull hard enough, the engine won't start.
Always pull the rope hard and fast.

Diesel Engine with Electric Starter System

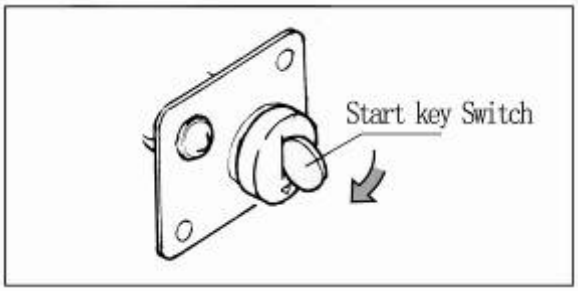
Starting

The preparation of the diesel engine for the electric starting system is the same as the manual recoil type.

a. Open the fuel cock.

h. Set the speed governor lever to the start position.

c. Turn the start switch clockwise to the “Start” position.



d. If the engine is started, immediately remove your hand away from the key switch.

e. If the engine does not start after 10 seconds, wait a while about 15 second before trying to start the engine again.

If you run the starter motor to long, the voltage of the accumulator will drop and the motor may be damaged. Keep the key switch in the “ON” position.

(1) Battery

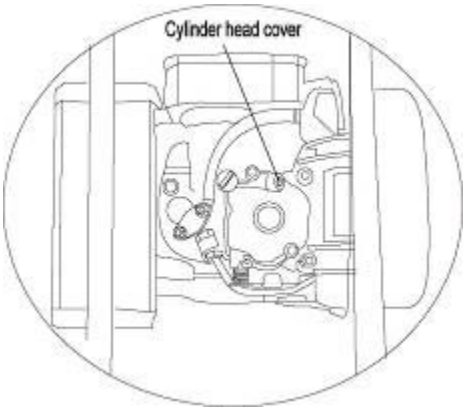
a. Always check the liquid level of the battery every month, if the level is lower than the low limit mark, refill the battery with distilled water till you reach the upper limit mark.

If the liquid level in the battery is to low, the electric stater will not function to its best potential. Always keep the level of the liquid in the battery between the upper and lower limits. If there is too much liquid, the liquid will splash onto other nearby parts there by ruining the battery.

Cold starting

If the engine is difficult to start in winter, take off the rubber seal plug and put 2cc of machine oil into the hole.

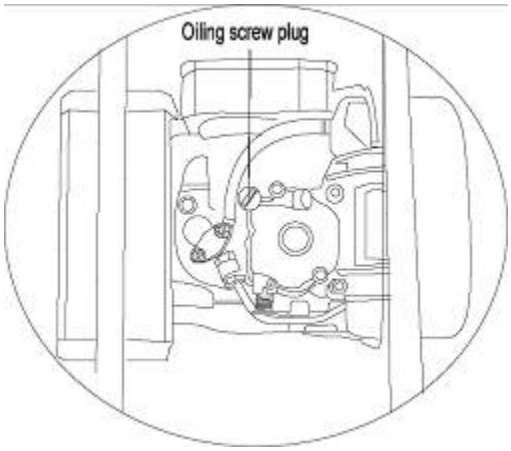
Notice: Engines supplied to the Torrid Zone will not contain the rubber plug. A solid plug is provided instead.



Warning:

Never use flammable liquids as fuel, such as gasoline etc. Also, never take away the air cleaner for easy starting of the engine, doing so may cause explosions from the intake gases.

Never take the oil plug unless you're planning on filling the oil. If the plug is not in place, rain, dust, and other impurities may be sucked into the engine causing serious damage to the engine parts.



OPERATION

Operating condition

The water pumps operating range should be based upon the NPSH (net positive suction head). A more precise definition of available NPSH is “the difference between the total suction head and the vapor pressure of the liquid, in feet of liquid, at the suction flange”. We can measure the total suction head of the pump and we can find vapor pressure from the liquid temperature. The difference between these two values is the available NPSH. The following equation is the mathematical expression of the definition for available NPSH:

hsv = has - hvpa where:

hsv = available net positive suction head, in feel of liquid

hsa = total suction head, in feet of liquid, absolute

hspa = vapor pressure of liquid at suction nozzle, in feet of liquid, absolute

The approximation will be based at an altitude less than 250 meters or 820 feet. Subtracting 10 meters or 32.8 feet from the net positive suction head can approximate the suction head of the pump. When increasing the altitude of operation, the atmosphere should be decreased as well as the suction head of the pump. The amount of decrease can be estimated by subtracting 10 meters from the local atmosphere value. If you are using sour pump at high altitudes and having difficulty obtaining NPSH values, please consult your local power equipment dealer.

It is better to use a straight and short pipeline when operating the water pump. A short and straight pipeline will minimize the frictional loses in the pipeline. The pipeline should be fixed to something to avoid vibrations. Before operating the pump, you must check the connections between the pump and pipelines to verify that everything is installed properly and that there are no leaks of any kinds.

The filter net should be kept at a certain distance between the river surface, river bottom, and riverbank. The net must also be submerged at least 0.3 meters or 1 foot below the water surface to avoid sucking air into the pipeline. The net must also be 0.2 meters or 0.7 feet above the river bottom or riverbank to avoid sucking stones or weeds into the pipeline.

If the gap between the impeller and flow guidance surface is over 1 mm, an adjustment shim can be added on the shaft shoulder to reduce the gap. This will permit continuous use of the water pump. Please refer to figure 2-2 for a diagram of the water pump and a listing of the components.

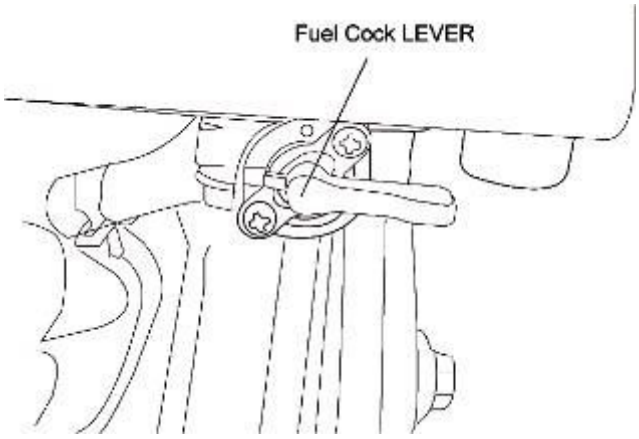
STOPPING THE ENGINE

First, bring down the speed of the engine by using the speed governor. Let it run for 3 minutes at no load before stopping it.

Then stop the engine.

> Sudden stops to the engine will cause abnormal temperature increases in the block of the engine. Decrease the load gradually when stopping the engine. Also, never stop the engine with the decompression lever.

Set the fuel cock at “S” (stop position)



If the engine comes with an electric starter, turn the starting switch to the “Off” position.

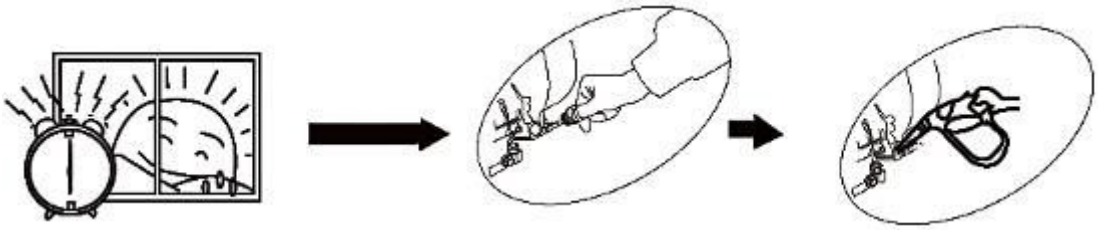
Pull the recoil handle slowly until pressure is felt by your hand, this means the piston is on the compression stroke; where the intake and exhaust valves arc closed and then let the handle recoil back into the engine. This natural position will prevent rust from occurring when the engine is being stored for long periods of time. Perform these steps only when the engine is off; doing so otherwise will damage the engine.

MAINTENANCE

Oil check

During operation, it is a good idea to check the oil every morning to ensure the engine has sufficient oil.

CHECK OIL EVERY MORNIING



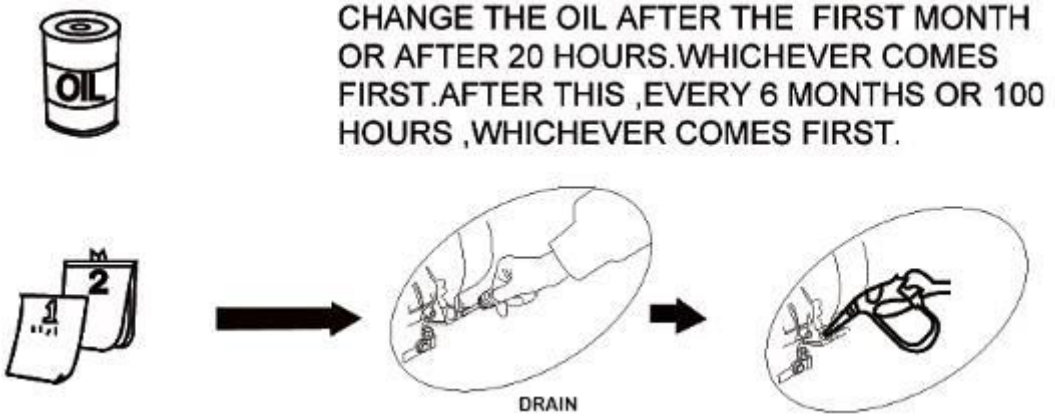
Oil change

Engine oil is a critical factor in determining the life of your engine. Change the engine oil on time. Change the engine oil more frequently if the engine is used in dusty areas.

Changing the oil while the engine is still warm will yield best results for the engine. When the oil is still warm, you get rapid and complete draining of the oil.

Oil change procedures

- Remove the oil filler cap and drain plug to drain the oil
- Install the drain plug, and tighten it securely.
- Refill with the recommended oil and check the oil level.
- Install the oil filler cap.


OIL
CHANGE THE OIL AFTER THE FIRST MONTH OR AFTER 20 HOURS.WHICHEVER COMES FIRST.AFTER THIS ,EVERY 6 MONTHS OR 100 HOURS ,WHICHEVER COMES FIRST.
2
DRAIN

Note: Do not touch motor oil for long periods of time. Used motor oil can cause skin cancer if it comes in contact with the skin for prolonged periods of time. Getting cancer from used motor oil is unlikely unless you handle used motor oil on a daily basis. To be safe always wash your hands thoroughly with soap and water as soon as possible after handling used oil.

Below a maintenance schedule table is provided.

Time / Item	Daily	After 20 hours or 1 month	100 Hours or Every 3 month	500 Hours or Every 6 month	1000 Hours or Every year
Check and tighten the nut and screw	○				
Check and fill machine oil	○				
Change machine oil		○ (First time)	○ (Second time and later)		
Clean and change oil filter				○	● (Change)
Check oil-leakage	○				
Change the core of air filter		Cycle of check and main-tenance will be shortened at dusty place.		○	
Clean fuel tank	Every month				
Clean or chane fuel filter				○ (Clean)	○ (Change)
Check nozzle				●	
Check injection pump				●	
Check pipeline of fuel				○ (Change if necessary)	
Adjust value clearance of inlet and exhaust		● (First time)		●	
Grind value holder of inlet and exhaust					●
Change piston ring					●
Check accumulator liquid	each month				
Clean the core of air filter		○ (Clean) Every month or 50 hours			

Air filter service

A dirty or clogged air filter will prevent air from flowing freely into the carburetor assembly. Always keep the air filter clean or replace if necessary. Also, if the air filter is dirty or clogged, the performance of the engine goes down. If operating the engine in a dusty area, service the air filter more frequently as dust particles will clog the filter at a faster rate. Never run the engine without an air filter, dust particles may get into the intake system and damage the engine. Rapid engine wear will occur if the engine is run without the air filter.

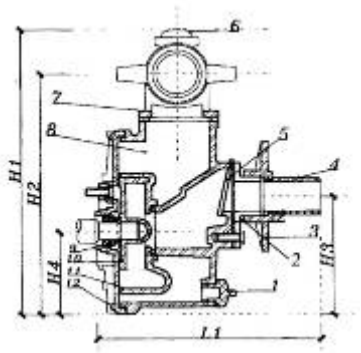
Do not wash the air filter if it is the paper type. Also, never use gasoline to wash air filter elements because gasoline is highly flammable and dangerous. A fire or explosion could occur.

Instructions on changing the air filter.

- Take the wing nut off and remove the air filter cover. Remove the elements and separate them . Check the elements for tears and holes. If holes or tears are present, replace the air filter elements.
- The foam element can be washed. Warm water and household detergent will work fine for washing the foam filter element. After washing, rinse it thoroughly with water and allow the element to dry. Soak the element in clean engine oil and squeeze the oil out. If there is too much oil left in foam element, the engine will smoke during startup.
- Tap Lightly several times on a hard surface to remove excess dirt, from the paper filter. Never brush on the paper element as this just forces more dirt into the paper element. Use compressed air to blow from the inside out to remove the excess dirt.

Pump maintenance

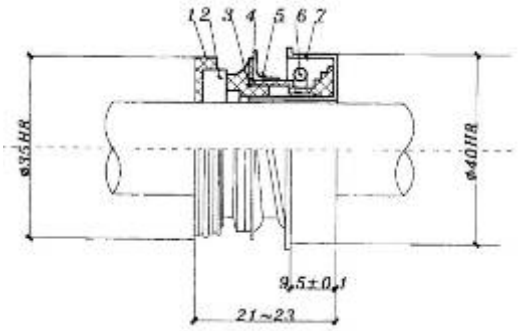
Figure 2-1. Water pump diagram:



1. Drain screw
2. Inlet pipe connector
3. Tightening flange
4. Inlet pipe
5. Door valve
6. Water addition port
7. Outlet elbow
8. Pump case
9. Shaft seal
10. Impeller
11. Flow guidance
12. Pump cover

Note: When changing the seal on the water pump, be sure to apply adhesive to the seal and the pump housing. This will prevent future leaks. Also, while installing the seal, do not hit or apply force, as this will damage the seal. Slowly ease the seal into place. Please refer to Figure 2-2 for a cross sectional view of the housing and shaft.

Figure 2-2 Cross *sectional* view *of water pump and components*



1.Sealing ring
2.Ceramic ring
3.Fixed graphite ring
4.Corrugated pipe
5. Washer

Note: After operation the pump during winter, be sure to drain all the liquid out of the pump to prevent damage to the pump. The pump may be damaged if left over liquid in the pump freezes.

TRANSPORTING AND STORAGE

A few guidelines need to be followed before transporting the water pump. Below is a list of instructions to be followed during transportation.

- When transporting the pump, turn the fuel valve off and keep the pump on a level surface to prevent fuel spillage.
- Secure the pump unit to a fixed object when transporting to prevent the pump from bouncing around Continuous bouncing around can damage the pumps internals.

Before storing the pump for long periods of time, please follow the guidelines below.

- Clean the pump interior before stopping the pump. Remove the pump drain plug and empty all fluids from the pump. Leaving fluid in the pump will cause rapid corrosion to the impeller.
- Turn the fuel valve to the “Off” position and empty all of the fuel out of the gas tank.

Note: While dealing with diesel fuel, do not smoke or allow flames to come near the fuel as accidents may occur. Failing to do so will lead to serious injuries or death.

- Change the engine oil.
- Remove the cold start oil fill plug and pour about a tablespoon of oil into the cylinder. Crank the engine several times.
- Pull the starter rope until resistance is felt. Doing this will put the cylinder on the compression stroke; where both intake and exhaust valves are closed. Having these two valves closed will prevent moisture from getting into the combustion chamber and causing corrosion.
- Cover the engine and pump and store in a dry place.

TROUBLESHOOTING

Problem	Cause	Remedy
Pump not pumping liquid	Not fill enough water	Refill the pump with water
	Leaking inlet pipe	Check the inlet pipe and connector of pipe, change pipe or tighten the clipper joint screw
	Low pump speed	Adjust the engine speed accordingly or find cause within the engine
	The filter net is clogged	Check and clean the filter net
	Capacity of the pump has been exceeded	Check the position of the pump and fix the operating conditions as specified
	Seal wear and leakage	Change the seal
Not enough water flow	The filter net, pipeline or impeller is clogged	Clean out the clogging matter
	Speed is low	Increase speed
	Impeller or seal is seriously worn and gap is too large	Adjust the gap or change the impeller and seal
	Leaking inlet pipe	Check the inlet pipe and connector of pipe, change pipe or tighten the clipper joint screw
	Impeller damage or serious leakage	Change the impeller to a new one
Flow of water is not	The total lift is too high	Check for the cause of the problem and adjust if necessary
	There is air in the pump or the inlet pipe and seal are leaking	Take the air drain cap off and release the air. Check the pipeline or change the pump seals
	Engine speed is not stable or constant steady or constant	Adjust the speed of the engine

Problem	Cause	Remedy
Power consumption of pump is too large	The impeller and flow guidance are rubbing each other	Listen to the sound of the pump carefully. If there are rubbing noises, adjust the impeller until the noise is gone
	The impeller is clogged with weeds or foreign matter	Check and clean the pump
No flow suddenly	The connector of the inlet pipe is loose or is leaking	Check the inlet pipeline and fix accordingly
	Suction head has been exceeded	Check the suction head and lower the position of the pump
Vibrational noises	Suction head is too high and causing cavitation	Check the Suction head and lower the position of the pump
	Large water output	Decrease the output of the water
	Inlet pipe is clogged with foreign matter, so the resistance is too large	Check the inlet pipe and filter net and clean if necessary
	Rotary part is loose	Listen carefully and inspect the part that causes the noise then stop the machine and adjust as necessary
	Pump unit is loose or not installed properly	Stop the machine and adjust the pump and engine
	Air inside the pump unit or air inside the pipeline	Remove the air drain screw and eliminate the air
	Impeller damaged	Stop the machine and replace the impeller

PUMP DIAGRAMS AND PARTS LISTING

Figure 4-1. exploded view of the water pump

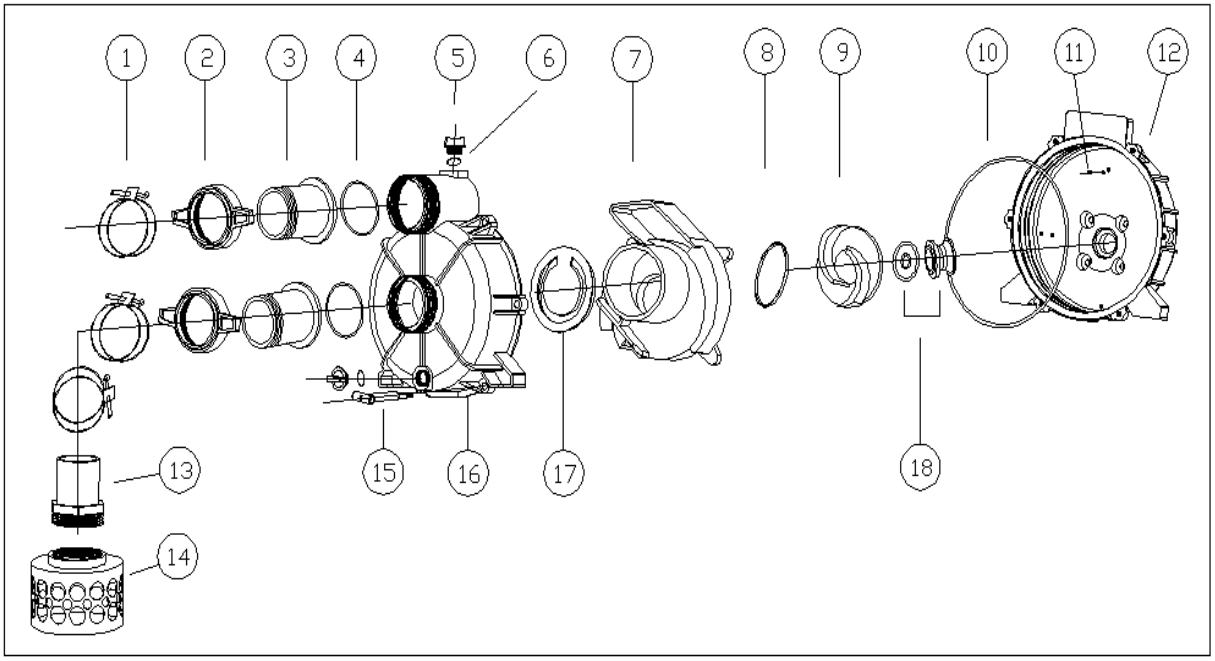


Table 4-1. Please refer to figure 4 - 1 for a complete illustration of the parts

No.	Parts Name	QTY	No.	Parts Name	QTY
1	φ87 hose band	3	10	O ringφ275×5	1
2	Hose coupling handle	2	11	Snap pin	6
3	In/Out Joint	2	12	Pump Base	1
4	In/Out Joint gasket	2	13	Hose Coupling	1
5	O ringφ130×3.1	2	14	Strainer	1
6	Plug	1	15	T Bolt（M6）	6
7	Water Guide	1	16	Pump Body	1
8	O ringφ54×3.1	1	17	Check valve	1
9	Impeller	1	18	Mechanical seal	1